

REMARKS

This is in response to the Office Action of 14 July 2005. Claims 1-6 are pending in the application, and Claims 1-6 have been rejected.

By this amendment, the Abstract and Claim 1 have been amended; new Claim 13 has been added; and arguments traversing the art-based rejections are presented.

No new matter has been added.

In view of the amendments above and remarks below, Applicants respectfully request reconsideration and further examination.

About The Invention

The present invention relates generally to a semiconductor packaging technology that provides for improved anchoring of an encapsulant to a carrier. More particularly, the present invention relates to a carrier with a plurality of apertures therethrough, the interior portions of the apertures being shaped to have at least one recessed portion therein such that the encapsulant extends laterally outward from the through-axis of the apertures. In this way, the encapsulant is locked to the carrier, and separation of the encapsulant and carrier is reduced or eliminated.

Objection to the Specification

The Examiner has objected to the Abstract of the Disclosure because of the extra line "Fig. 1"; and has also objected to the specification for an informality, to wit, lack of section heading or subtitles.

By this response, the Abstract has been amended so that the extra line, which reads "Fig. 1", has been deleted.

With respect to the section headings, Applicant respectfully declines to amend the specification headings, as these do not appear to be required under 37 CFR §1.77 or MPEP §601.01(a).

In view of the foregoing, Applicants respectfully submit that objections to the specification have been overcome.

Objection to the Claims

The Examiner has objected to Claims 1 and 3 for various informalities.

By this response, Claim 1, line 3, has been amended in a non-narrowing manner to correct the informality cited by the Examiner. More particularly, "which electroconductive layer" has been amended to read "the first electroconductive layer" to correct the antecedent basis for this element.

Claim 1 has been further amended to make clear that the "isolated connection conductors" are separated by apertures. Support for this amendment can be found in the specification at page 5, lines 22-23, and in Figs. 1-2, 4, and 7-9. This amendment provides the antecedent basis for apertures in Claim 3.

In view of these amendments, Applicants respectfully submit that the objections to Claims 1 and 3 have been overcome.

Rejections under 35 USC §102(b)

Claims 1-3 have been rejected under 35 USC §102(b) as being anticipated by Tsuji, et al., (US Patent 5,656,550).

For the reasons set forth more fully below, Applicants respectfully traverse the rejections under 35 USC §102(b) and request that these rejections be withdrawn.

Applicants note that the cited Figures and description of Tsuji, et al., actually show a structure that is different from that set forth in Applicants' Claims. More particularly, Tsuji, et al., show (Figs. 21A - 21C) and describe (column 15, line 63 - column 16, line 13) a structure in which recesses (64) are filled by a first insulating material (51a). This first insulating material is not the same as the encapsulating resin which seals the integrated circuit and provides environmental protection. Further, the

first insulating material (51a) is separated from the encapsulating resin (23) by layers (51b, 52), which are deposited subsequent to first insulating material 51a and prior to resin 23. It can be seen that the structure disclosed by Tsuji, et al., is different from the structure defined by Applicants' Claims (i.e., the envelope is mechanically anchored to the connection conductors), and cannot perform the function of Applicants' claimed structure, which is anchoring the envelope (e.g., encapsulating resin).

In view of the foregoing, Applicants respectfully submit that the rejections under 35 USC §102(b) are improper and should be withdrawn.

It is noted that Tsuji, et al., teach that the encapsulating resin portion (23) is separated from the recesses (64) by various layers (51b, 52), and so the encapsulating resin cannot be anchored by those recesses. In view of this teaching of Tsuji, et al., Applicants respectfully submit the cited references, either singularly or in combination, do not suggest or provide motivation for the invention defined by Applicants' Claims.

Rejections under 35 USC §103(a)

Claims 4, 5, and 6 have been rejected under 35 USC §103(a) as being unpatentable over Tsuji, et al., (US Patent 5,656,550), in view of various combinations with Rostoker (US Patent 5,340,771), Osawa, et al., (US Patent 6,077,727), and Harada (US Patent 6,091,144).

Applicants respectfully traverse the rejections under 35 USC §103(a) and request that these rejections be withdrawn.

As noted above, Tsuji, et al., does not disclose the limitations recited by independent Claim 1, which requires "that the envelope is mechanically anchored in the connection conductors". It can be seen then, that the various combinations of references do not produce the invention defined by Applicants' Claims.

In view of the foregoing, Applicants respectfully submit that the rejections under 35 USC §103(a) are improper and should be withdrawn.

New Claim 13

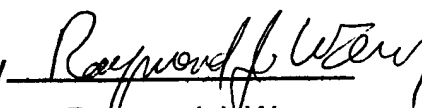
New Claim 13 depends from amended independent Claim 1, and is directed to an additional aspect of the present invention, in which the carrier is disposed upon a substrate. Support for this Claim can be found in the specification at page 8, lines 32-33, and in Fig. 9.

Conclusion

All of the objections and rejections in the outstanding Office Action of 14 July 2005 have been responded to, and Applicants respectfully submit that the pending Claims 1-6 and 13 are now in condition for allowance.

Applicants respectfully request that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

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Hillsboro, Oregon